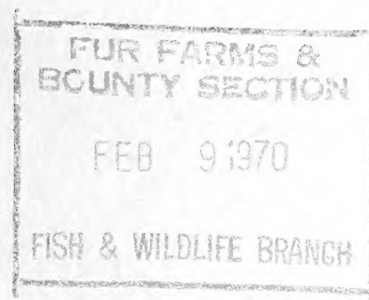


RESOURCE MANAGEMENT REPORT



DEPARTMENT OF LANDS AND FORESTS

HON. RENE BRUNELLE
Minister

G. H. U. BAYLY
Deputy Minister

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FISH AND WILDLIFE BRANCH



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November 1969

(Editor's Note: This issue 103 of the Resource Management Report series is a special issue dealing entirely with deer and their management. The minutes of the 1969 Deer Range Improvement Workshop, papers presented there on Deer Tagging plus two other interesting reports on deer management have been grouped together in this issue for handy reference).

MINUTES OF DEER RANGE IMPROVEMENT WORKSHOP
NORTH BAY, JUNE 24, 25 and 26

by

Stan MUNROE, Biologist
Parry Sound District

The following are the minutes of the Third Deer Range Improvement Workshop held in North Bay, June 24-26, 1969. The chief ranger headquarters at Trout Lake was the site of this gathering which involved representatives from Head Office and the following districts: Kemptville, Pembroke, Tweed, Lindsay, Lake Simcoe, Lake Huron, Parry Sound, North Bay, Sault Ste. Marie and Sudbury.

Tuesday, June 24

The meeting began at 9:00 a.m. Following introductions, Don Simkin, Game Management Section, Maple, took the floor. Mr. Simkin suggested that the emergency phase (Phase 1) of the Deer Range Improvement Program be de-emphasized with the concentration now on the long range aspect (Phase 2) of the program. He mentioned that Pat Karms will be arriving in August as the Deer Range Biologist, thus completing the Head Office staff of the DRI Program. (Note: Mr. Karms has since informed the Department that he would not be accepting the position). The program has entered another phase this year with the hiring of Stan Munroe as the first District Deer Range Biologist. Stan will be stationed at Parry Sound for a year for training. Now that Head Office staff is complete and the field staff is being strengthened, we can be more critical of our range improvement techniques. Mr. Simkin proposed that the name of the program be changed from Deer Range Improvement (DRI) to Deer Range Management (DRM) to describe the program's long range aspect.

The meeting was then turned over to the Chairman, Dr. Harold Cumming, Big Game Management Subsection, Maple.

Dr. Cumming further stressed the need for the long range aspect of the deer management program, and suggested that we all present constructive discussion and appraisal of each district's improvement program.

The following papers were then presented by the delegates from the participating districts.

Sault Ste Marie

Ed Mantle - He described the grid-cutting techniques they had been using in the district. This method produced abundant browse over a wide area, creating plenty of edge effect. This, he felt, was superior to the block cutting, they did some scarification but suggested this was not practical over the entire range due to the rough terrain. Another part of their program was the erection of exclosures on the treatment areas. Ed indicated that the small difference noted in browse production between the open and exclosed areas during the first year made exclosures impractical for assessment. His presentation ended after a series of slides of some treatment areas in the district.

Following the paper the following points were discussed:

(1) exclosures - Don Simkin suggested that the erection of exclosures in treatment areas would provide the public a chance to view deer range improvement. Alex Matiece stated that several years following treatment, exclosures would point out the spectacular differences in browse production between an open and an exclosed area.

(ii) commercial cutting - Bert Post insisted that the success of the DRM program depends upon the stimulation of more commercial pulpwood operations throughout the entire deer range.

(iii) Grid-cutting technique - Dr. Cumming asked whether this technique could be applied in other districts. John Macfie suggested that this method would not be practical in the Parry Sound District due to the broken timber types and the topography.

Sudbury District

Jim Shepard presented the Sudbury program and stressed that Drolet was responsible for the program in that district. Work during the previous year was done in the Killarney, Espanola and Burwash yards. There was no systematic approach to their cutting, for it was done where the deer were found wintering. Thus work was spread over a wider range and cost and effort were reduced. They feel their program has been quite successful to date for utilization is high and they think they are drawing in deer to the treated areas from as far as 40 miles away. Members of the public are seeing their treatments and claim to be seeing more deer, thus the public is backing up their program. They feel that more effective wolf control is essential in their district to make their project a success.

Following the Sudbury presentation a discussion was raised concerning the aesthetic and commercial value of deer in Ontario. Mike Wilton and Lionel Trodd stated the problems they are faced with in the Pembroke District which includes a large share of Algonquin Park. Don Simkin cleared up the controversy by stating that Head Office was providing funds to improve deer range to create more deer for better hunting not viewing.

Lake Simcoe

Bob Trotter and Harold VanWyck presented the Lake Simcoe program. Deer range improvement was carried out in four northern townships during the 1968-69 year. Their program is faced with a number of problems: the inaccessibility of deer yards, the predomination of private land in their district and excessive wolf predation. Before they do any cutting, they cruise the yards and find the areas where deer are bedding down. Then they select plots in these areas and patch-cut.

A series of slides were shown of the work done in their district, illustrating the tremendous growth and utilization of the plots one year after treatment.

North Bay

Ron Campbell - Treatment during the past year was done in the Bertram, Antoine, Martin River and Mattawa deer yards. Treatment techniques included hand cutting and girdling in long narrow strips along natural deer trails. They are aiming for a treatment turnover in each yard of 3 to 4 years. Ron mentioned that a television program was made of the Department's work in the Mattawa yard last year, and it was a public relations success.

The North Bay presentation closed after a series of slides.

Pembroke

Lionel Trodd and Mike Wilton gave the report on the Pembroke 1967-1968 deer range management program.



Deer Range improvement techniques included cutting by chain saws and clearing by bulldozers. Bulldozer work started later in winter than other methods and was a great success. The trails created by the machines were heavily used by deer. In some cases, these were made purposely to direct deer to feed in many treated areas to prevent concentration and over-utilization.

In addition to treatment for food, District staff was involved in an extensive program to map the deer yards in the district. Fish and Wildlife staff initiated a program for cover planting. Timber Branch planted 100,000 spruce seedlings in areas selected by Fish and Wildlife staff in the Bonneschere yard.

They feel their program is highly successful and is being accepted by the public as a result of good press coverage. More effective predator control and enforcement are considered necessary to further improve their program. Their presentation came to a close with a series of informative slides.

Lake Huron

Reports on deer range management for 1968-69 were given by Dan Mansell, Jack Armstrong and Bill Grieve. All the improvement work took place on the Bruce Peninsula. The deer range improvement program is hampered by rocky terrain with poor soil, the over-abundance of cover and the lack of crown land. They have been working on methods to permit the release of dogwood and aspen for food. Assessments have shown abundant coppice growth on dogwood, aspen and ash.

Parry Sound

Jack Macfie - Deer Range Improvement has been in existence in this district for the past seven years. To date, in 45 yards, 1,131 acres of low grade hardwood have been cut down. Browse stimulation by hand tools has been the basic technique since the terrain is not conducive to bulldozing. Cutting has been selective rather than systematic. Cover areas are located and cutting is done nearby. Red and hard maple have been the major species treated. Treatment was continued last year as in the past, except that there was more contracting of work. Costs for contracted work were lower than for work done by Department employees. Some scarification was done in remnant hemlock stands to aid the natural seeding of hemlock. This was probably a failure for 1968 was a poor seed year for hemlock.

The program in Parry Sound is getting to the point now where they need to re-treat previously treated yards. Few yards remain that have not been treated, and these occur on private land. To date there has been little difficulty in getting approval to do range improvement work on private lands.

Lindsay

Steve Toole - Sixteen project areas in the district were selected for browse improvement. Hand treatment was the basic cutting technique. Signs of malnutrition in older deer and fawns near the Peterborough Crown Preserve, prompted intensive treatment for browse in seven areas adjacent to the Preserve. Most of the Crown land in the district has now been treated. The program in future must concentrate on the improvement of deer range on private land which makes up two-thirds of the District.

Tweed

Frank Cheshire - Deer yard inventory and mapping have been the major emphasis of the deer range management program to date. We are now ready to use this inventory information for the long range program to improve winter

deer range. Treatment measures have been divided along three lines: non-commercial planned, non-commercial emergency, and commercial planned.

Kemptville

Romeo Belanger - Practically nothing was done during the past year for deer range improvement for food production. Some inventory was done but the main work was the planting of spruce and pine seedlings to improve cover. This was part of a project to develop three hundred acres of agricultural land as habitat for ruffed grouse, hungarian partridge and deer.

This report ended the presentations of each District's DRI program and ended the first day of the session.

Wednesday, June 25

The meeting resumed on Wednesday morning with Dr. Cumming in the chair. The first half of the morning session was basically discussion. The first point discussed was the need for closer liaison among the departmental branches to make DRM a success. The greatest co-operation is needed with Timber Branch; cutting methods could be improved as a result. It was felt by all concerned that close liaison is necessary between Fish and Wildlife and Parks Branches when yards which harbour hunttable deer are found on Parks lands. It was further emphasized that the DRM program was set up to provide more deer for hunting not viewing.

DRM Costs

Dr. Cumming initiated a discussion of DRM costs - what is the investment doing for deer? Can each district be any more efficient? It was pointed out that since each district has its own definition of costs per gross and net acre, it was necessary to standardize cost interpretation to permit comparisons among districts.

Bert Post presented a plan for cost standardization. He suggested that the cost figures from each district's report should stand alone so that data can be easily extracted for comparison. However, it was decided by the delegates that Head Office send out a standard format to each district for review. Suggestions on improving the format should be sent back from each district, then a final format be designed from this.

Legal Problems

A further discussion centred around the legal approach to deer range improvement on private land. During the emergency phase of the program, treatments were done primarily in yards which were on Crown land. To complete the deer range improvement program the work must now concentrate on private lands.

A formal legal agreement has been created by Law Branch to be used when treatment is to be done on private land. The major criticism voiced by the delegates was the "25 year clause" in the legal agreement, which prevented a landowner from cutting merchantable timber on his land for 25 years without Department approval. Landowners may not want to have their land tied up for that long. Another criticism of the legal agreement was that it was too complicated with legal terms to be understood by landowners and it was not flexible enough.

Frank Walden, Wildlife Section, Toronto, defended the legal agreement by emphasizing that it is a protective measure for the investment and the Department. He felt it would be most unfortunate if a landowner could cut at any time he pleased after the Department spent money to manage the area. What is needed is DRM clauses written into the Woodlands Improvement Act, then management plans for an area for forestry and wildlife could be worked out by Fish and Wildlife and Timber Branches to be presented to the landowner for his consideration.

The opinion of most field staff was that this legal approach to deer range work on private land is not practical the way it exists. John Macfie (Parry Sound) felt that their work would be slowed down considerably if they abided by this formal agreement. In the past they have written letters to landowners and have been very successful in selling their program to perhaps 50 of them.

Dr. Cumming then posed this question: How does the DRM program tie in with the issuance of timber licences? Don Honeyborn of the North Bay Timber Branch informed the group that his district had arranged to have a clause written into their timber licences stating that deer shelter areas would be protected from cutting.

Alex Matiece, Deer Range Forester (Maple) gave a short talk on the silvicultural characteristics of regenerating hemlock. Hemlock is a very important cover species and has disappeared at an alarming rate. Plantations might be the answer in developing new stands of hemlock or rejuvenating remnant stands. Regenerating hemlock seedlings have narrower site requirements than most other conifers and have proven difficult to grow artificially. A cool moist shady micro-climate is required for hemlock to regenerate. An interesting thing about this species is that they can withstand suppression for a number of years but can grow at a phenomenal rate following release.

An experimental hemlock plantation was started this spring in the Killbear Provincial Park, Parry Sound District. Approximately 1,000 seedlings were planted and if proven successful, the overstory will be cut allowing release of the hemlock.

Alex stated that future needs for hemlock, spruce and pine seedlings in DRM projects will be each district's concern, and will be included in each district's timber forecast.

Bert Post, Deer Range Ecologist (Maple) presented a paper on mountain maple. His paper was a summary of results he gathered from several research projects done on this species in northwestern New Brunswick. He found that mountain maple did not produce rootsuckers and produced abundant seed crops only one year in six. However, following clear cutting, mountain maple will sprout and layer vigorously. Frank Cheshire (Tweed) suggested that dogwood and other important shrubs eaten by deer could be managed more effectively if they had similar silvicultural characteristics to mountain maple.

Dan Mansell (Lake Huron) questioned whether the Department was contemplating the issuance of grants (from DRM funds) to university students to study problems concerned with the deer range program. This could operate similar to the co-operative wildlife units in the States. This could be a most beneficial program and would supplement our staff.

The final part of the program in the afternoon was a deer census symposium chaired by Robin Hepburn of Research Branch.

The first speaker was John Macfie (Parry Sound.) He presented a paper on deer census techniques written by Carman Douglas of the Parry Sound District. John added some of his own comments on deer censusing methods in the district. He mentioned that their staff did a crotising count in the Killbear yard the past spring. They did not believe the population estimate obtained, so they repeated the survey, only this time they stratified it. An almost identical population estimate was obtained. With this result the pellet count method has some merits, though it has inherent weaknesses. What ultimately is required to make this method more valid is a more adequate knowledge of deer movements, with a more concentrated effort to precisely determine where deer are yarding each winter.

Mike Wilton (Pembroke) added that the public will soon want to know the size of our deer herds, and will be very dissatisfied with our inability to determine deer numbers.

The next speaker was Dan Mansell of the Lake Huron District.

He mentioned that by a combination of yard crotising counts and hunter kill data they came up with an estimate of 2,000 - 2,500 deer in the Bruce Peninsula. The basic weakness of the pellet count survey is that the yarding period is too rigid and must be altered according to conditions rather than always being leaf-fall date to date of survey.

John Macfie (Parry Sound) suggested that tagging and radio telemetry might answer the questions concerning deer movements and yarding period.

Following lunch, Mike Wilton (Pembroke) gave a paper on deer census in the Pembroke District. A district-wide crotising count was completed during the past year. By sampling 1,200 plots in yarding areas only, an estimate was made of 14,500 deer for the entire district. Robin Hepburn of (Research Branch) suggested that this estimate might be a gross underestimate of the deer population. Dr. Cumming explained that in Europe deer densities are always underestimated.

Milan Novak (Fur Management, Maple) suggested that crotising counts were probably the only way of estimating deer numbers. He spoke of a study he did in Michigan on the efficiency of personnel doing pellet group surveys. He found that the rate of efficiency varied in different types of terrain and at different times of year, and that efficiency dropped as a result of fatigue.

It must be the opinion of all connected with deer surveys that the many variables encountered in the pellet group count obscure its accuracy, but that it is the best and only method we have. There is indeed an immediate need for a standard accurate technique to estimate deer populations in Ontario.

The next part of the agenda concerned Predator Control. John Shannon (Fur Management) and George Kolenosky (Research Branch) took over the meeting. George presented some unpublished results of his wolf research in the Pakesley study area in the Parry Sound District. Through a study of wolf movements he found that 8.4 percent of the deer in the area were removed by wolf predation. This figure was much less than anticipated in this area which had an average wolf density of 1 per 10 square miles. He found that deer were killed at the rate of one every 2.2 days during the past winter. Predation efficiency was 63 percent in 1968-69 as compared to 25 percent in the 1967-68 winter. This greater efficiency was probably a result of the heavily packed snow condition during the previous winter.

Predation was generally quite evenly distributed among the deer age classes in the Pakesley area. The age composition of all deer kills examined from all districts indicated a marked selectivity for over-aged deer. The exception to this was in the Parry Sound District where 34.4 percent of wolf kills were fawns.

He anticipated that a figure will be available soon for the actual amount (in pounds) of deer consumed by wolves. George stressed that several important questions need to be answered - does wolf harassment affect deer by chasing them from their yards? Does predation result in certain yards ceasing to exist?

Is predator control justified in deer range management? This touchy question was answered quite satisfactorily by Dr. Cumming when he suggested that if wolves were a factor preventing a deer population from rebounding following yard treatment, then we have all the justification in the world to carry out wolf control.

Bob Trotter (Lake Simcoe) was of the opinion that predator control should be carried out in areas where deer range improvement work has been done and wolves have moved in to kill deer. There is no point in concentrating deer by supplying immediate food and then letting the wolves kill them.

John Shannon (Fur Management) suggested that if range carrying capacity has exceeded the deer supply then predator control might be justified. We should go into an area before freeze-up and remove all wolves. We have to know when and where predator control fits into deer management so that adequate programs can be set up.

George Kolenosky (Research Branch) brought up an important point: if hunters aren't capitalizing on the additional deer created by deer range improvement, then we should ask ourselves whether we should go on with further treatment in that area. Is predator control beneficial for one year? We know that if one wolf pack is eliminated from an area the pack is replaced by another the following year. Unless we control an area for a number of years we might not see the desired end result of the DRM program.

Robin Hepburn (Research Branch) handed out copies of his recent publication "Experimental Management of Mixed Conifer Swamps for Deer and Timber in Eastern Ontario." A summary of his paper now follows:

In 1957, a co-operative project was undertaken to study methods of cutting merchantable conifer swamps in northern Frontenac County for optimum regeneration of white spruce and white cedar, the spruce to supply a future timber crop and cedar to provide both winter food and shelter for white-tailed deer.

After preliminary timber inventories and browse surveys, cutting plans were drawn up for 15 swamps totalling 318 acres. These were cut during the winters 1958 to 1963. Five swamps were chosen for quantitative study.

Post-cut regeneration and browse surveys were conducted in 1961, 1966 and 1967. Response of deer to various cutting treatments was examined during the winters of 1963, 1964 and 1967 by tolling their tracks, trails and beds along standard transects in the experimental swamp and adjacent uplands.

At this early stage in post-cut development, results indicate that although stocking of important tree species is adequate on almost all treated areas, patch-cut and strip-cut blocks have a somewhat better species composition in the regeneration and shrub stories than do others.

The response of deer has been decidedly in favour of patch-cut swamps over clear-cut and thinned stands, because of advantageous distribution of residual canopy (hence shallow snow) around the cut patches combined with enhanced food supplies within the patches.

Management recommendations are still tentative but stress the value of patch cuts to other systems provided the acreage and pattern of cut will allow sufficient cedar to escape current browsing pressure to form a new stand. Removal or reduction of slash after the cut is desirable.

The day's session was closed with a message from Frank Walden, Wildlife Section (Toronto). Mr. Walden mentioned that the DRI program has raised criticisms from within and outside the Department. We are faced with a problem of creating new problems at a faster rate than old problems are being solved. A number of other points were brought up by Mr. Walden:

- The need for closer co-operation between Timber and Fish and Wildlife Branch.
- The necessity of demonstrating the benefits versus the cost of our programs.
- The need to find sound methods to estimate deer populations.
- He criticized field staff for their wrong attitude towards certain things and that they were too easily influenced by outsiders.
- We need to communicate more effectively to the ever critical public concerning our deer management program.

Concerning the predation controversy, Mr. Walden asked these questions: Does wolf predation really affect the deer population? Do wolves play a useful role? Can we afford to get rid of wolves, that is, will the benefits be worth the cost?

He expressed the opinion that we spend too much time speculating rather than interpreting. Our goals are not precisely defined. We want more deer, but we lack confidence in our ability to solve the problem. In ending he stressed that we must face the public on a more realistic basis.

Before the meeting broke up, Dr. Cumming showed a 15 minute movie that he filmed of various DRI projects throughout the province.

Thursday, June 26

What was planned as a one hour seminar on methods of capturing deer turned into a full morning session. This session was held to facilitate an interchange of techniques used by field staff to capture deer.

The first technique discussed was the Method of Automatically Tagging Deer With Self-Attaching Collars. Evaluation of the technique from Ron Campbell (North Bay), Ed Mantle (Sault Ste. Marie), Lionel Trodd (Pembroke), John Macfie (Parry Sound) and Dan Mansell (Lake Huron) stressed that this method was unsatisfactory. It is difficult to get the snare properly adjusted so that deer will be properly tagged, and there is no way to know that if the snare is gone it is on a deer. Returns of successfully tagged deer have been scanty to none.

Robin Hepburn (Research Branch) suggested that those interested should contact Henry Laramie of the New Hampshire Conservation Department for information on a deer collar with an expansion core. This is a more complicated method, but it has proven quite successful.

Live Trapping

Austin Henderson (Lindsay) gave a short illustrated talk on his successful deer tagging and trapping program. By using a modified Clover trap, 173 deer were captured in 559.5 trap days over the period 1959-1963. Of the 53 deer tagged, 15 percent were recovered.

Guy Winterton (Parry Sound) had poor success with the trap method. He failed to capture any deer during 468 trap nights. It was his opinion that the traps are too easily seen by deer and are too cumbersome to be effective.

Jack Stewart (Lake Huron) described the successful trapping of 15 deer in the southern region of the district and their subsequent release in the Bruce Peninsula. To date, 12 sightings and 2 recoveries of these tagged deer have been made. Movements of up to 8 miles in the direction of major yarding areas have been seen.

Dan Mansell (Lake Huron) suggested that there be an arrangement for the exchange of trapping equipment from district to district in the event that changing conditions of deer yards warrant one trapping method superior to another.

Dart Gun Capture Method

Guy Winterton (Parry Sound) explained their trials with this technique and the disappointing results. Ideal conditions are required in order to shoot a dart into a deer at short range. Such conditions were rarely obtained.

Lionel Trodd (Pembroke) displayed the equipment he was using to capture deer with drugs. He described the merits and the disadvantages of each type of dart gun. He emphasized that to be successful, one must have ideal conditions (short range and a clear unobstructed view), the deer must be hit in the proper area, the deer must be handled so as not to upset them, and one must be aware that deer react in various ways to the drug depending on size, sex, and season, etc.

These deer are being tagged, but the tags are only being seen for one season. They must be falling off.

Foot Traps

Lionel Trodd (Pembroke) mentioned the use of foot traps to automatically attach rubber tubing (as tags) to the feet of deer. They have had fair success with this technique.

Netting Deer

Dr. Cumming presented a paper on methods of capturing deer. While doing his PhD in Scotland, he used nets to capture roe deer. He had suggested that this might be a valuable method to capture white-tailed deer. During three winters with assistance from Lake Huron, Parry Sound and Pembroke staffs, he tested the nets and last winter was finally successful in catching deer. A problem that arises, however, is how to handle deer after they are caught.

Telemetric Methods

Guy Winterton (Parry Sound) explained that radio-transmitters had been placed upon two deer last winter. No signal had been received from either, however. He emphasized the need for transmitters with a directional antenna. The Parry Sound District will continue to use traps but feel that whale nets have the best possibility for capturing larger numbers of deer for tagging and radio telemetry.

Before the meeting closed, Ron Campbell (North Bay) invited all delegates to visit the Mattawa deer yard to see the treatment they had done.

A few of us took the opportunity to visit this deer yard. Treatment in 1967-68 included the cutting of red maple, hard maple, aspen and dogwood. Potential commercial sized trees and hazel were left uncut. Treatment was light so it would not be noticed from the nearby river.

A browse survey by Alex Matiece earlier in 1969 estimated a production of 100,000 stems per acre following treatment. Hazel stems made up nearly half of the figure. If hazel is eliminated from the figure, it appears that production is low for this treatment as compared to other areas which were clear cut.

DEER TAGGING - NORTH BAY DISTRICT

by

Ron CAMPBELL,
Wildlife Management Officer

Marking deer has been tried on several occasions in the North Bay District. Three people were involved in these attempts, M.C. Miller, Conservation Officer at Haddo, Gordon Black, Conservation Officer at Mattawa, and the writer when he was stationed at Mattawa.

Method

The method that was tried was that of automatic or self-tagging devices. I believe that everyone here is familiar with these devices so I will not dwell on their construction. Primarily they consist of a snare with a break-away nylon rope collar. A complete description of this device may be found in The Journal of Wildlife Management, Volume 26, No. 4, 1962, "An Automatic Tagging Device for Deer," by Louis J. Verme.

Results

In general, we have had rather limited success in our attempts to tag deer. During the winter of 1964-65 Miller was issued with eight collars. He successfully tagged three animals. Two other collars were broken away by deer. The same winter working with fifteen collars I was successful in tagging only one animal. Approximately eight other collars were broken away by deer, but they failed to attach properly for various reasons. During the winter of 1966 Black spent more time on this work. He was successful in tagging seven animals. Seven other collars were broken away but they failed to work properly. They either broke prematurely or failed to break at the right point. Black found that the slide ring tended to bind when it came to the point that the wire was soldered to the snap. He found that smoothing of the soldered joint and retaping it, and then applying a coat of vaseline on the tape, reduced binding of the ring. As the winter went on he gained experience and started having more success.

A total of eleven animals were tagged in this district during the two winters. Only one tag was recovered. It was attached to a deer in Bertram Township in March 13, 1965. Subsequently, it was recovered from a 2-1/2 year old buck in Latchford Township in November, 1965, about nine miles from the point of tagging. The tag was turned in at Hespeler. The following is a quote from a letter sent to us from Hespeler regarding this animal "The 23" collar that was removed from the deer had penetrated the skin at the base and top of the neck." Apparently pictures were taken showing the effects of the tag but we did not receive them.

Comments

I believe that it is possible to tag a good number of animals with self tagging devices. The setting of these devices and proper amount of filing of the wire are most important for successful tagging. Therefore, it is essential that the person who is setting the collar be as experienced as possible. The collar should be at least partly camouflaged as we have had animals back away from sets. The most critical factor is to get the proper amount of filing in the right location so that the wire will break after the slide ring has snapped into place and not before. The joints where the wire is connected to the snap should be examined for any bumps and smoothed if necessary. Then the connection

should be retaped. A coating of vaseline on the tape will reduce binding and assist the slide ring to snap into place.

I would recommend that the length requirements of the collars be given more study. The collars that were issued in our district were 18" long and 22" long. The results of our one return indicates that this is not long enough as the collar apparently had stretched to 23" and was still cutting into the neck of the animal.

DEER TAGGING - ABERDEEN DEER YARD

by

Ed Mantle
Wildlife Management Officer
Sault Ste. Marie

This will advise that during our deer tagging experiment at Lonely Lake and Poplar Dale deer yards the following difficulties were encountered -

- (1) We found that the deer shied away in some cases from the yellow collars and as a result white polyurethane was used.
- (2) We found that in many cases the wire was notched too deep and before the snap closed on the ring the wire broke away and the collar was found approximately 25' away from the site on the trail.
- (3) In one instance the notch in the wire was not deep enough and a deer had to be released in the morning.
- (4) In two instances the wire was pulled free from the tree and the deer took both the collar and the wire.
- (5) One dead deer was found approximately three days after being tagged - the cause of death was undetermined, the collar was loose enough that it was pulled over the head with very little difficulty.
- (6) The size of the collar could possibly cause difficulty to adult males during the rutting season.
- (7) To our knowledge no deer collars were returned by Hunters and no collars were observed on deer the following winter deer-yarding period.

LINDSAY DISTRICT

DEER TAGGING PROJECT

PETERBOROUGH CROWN GAME PRESERVE 1959 - 63

by

A. R. HENDERSON
Conservation Officer

INTRODUCTION

White-tailed deer were live-trapped, ear-tagged and released in the Peterborough Crown Game Preserve, Burleigh and Methuen Townships, Peterborough County. The operation was carried out in the middle and late winter months of 1959 inclusive by the author with occasional assistance from other Department staff.

Primary objectives were to develop a successful live trapping technique and to gather information on the influx and egress and trapping mobility.

Trapping was done on the west side of the Preserve in South Burleigh township because there was a heavy winter concentration of deer and at that time logging operations provided ready access and trapping mobility.

MATERIALS:

The type of trap used was a modified version of the "Clover deer trap" (designed by Melvin R. Clover, Game Management Branch, California Department of Fish and Game - report published February 1954). Basically it was a steel pipe framework 'box' eight feet long by four feet high by four feet wide. The frame was collapsable for mobility and when folded flat, measured 12 feet by four feet.

For the first two winters the frames were covered with heavy four and one-half inch cotton mesh netting. As deer were seen breaking through this netting (in 1959 eleven deer escaped in this manner) the sides and entrance were covered with one and one-half inch link wire mesh ("chain link" fencing material) which being collapsable was ideal for the entrance.

On one end of the trap a single section of the wire netting was attached to two extra upright pipes with large metal rings allowing it to be folded up. The lower edge was weighted to allow rapid and complete closure of the entrance.

The trigger and release mechanism for this "gate" consisted of a trip line just above ground level inside the trap (see Figure I) this line was attached to an ordinary rat trap which when sprung released a retaining wire on the folded up gate causing it to fall shut.

The cost of such a trap at that time was estimated at forty dollars.

METHOD

Traps were placed on top of the snow and allowed to settle and freeze in. They were located in clearings in recent cut-over areas. It was

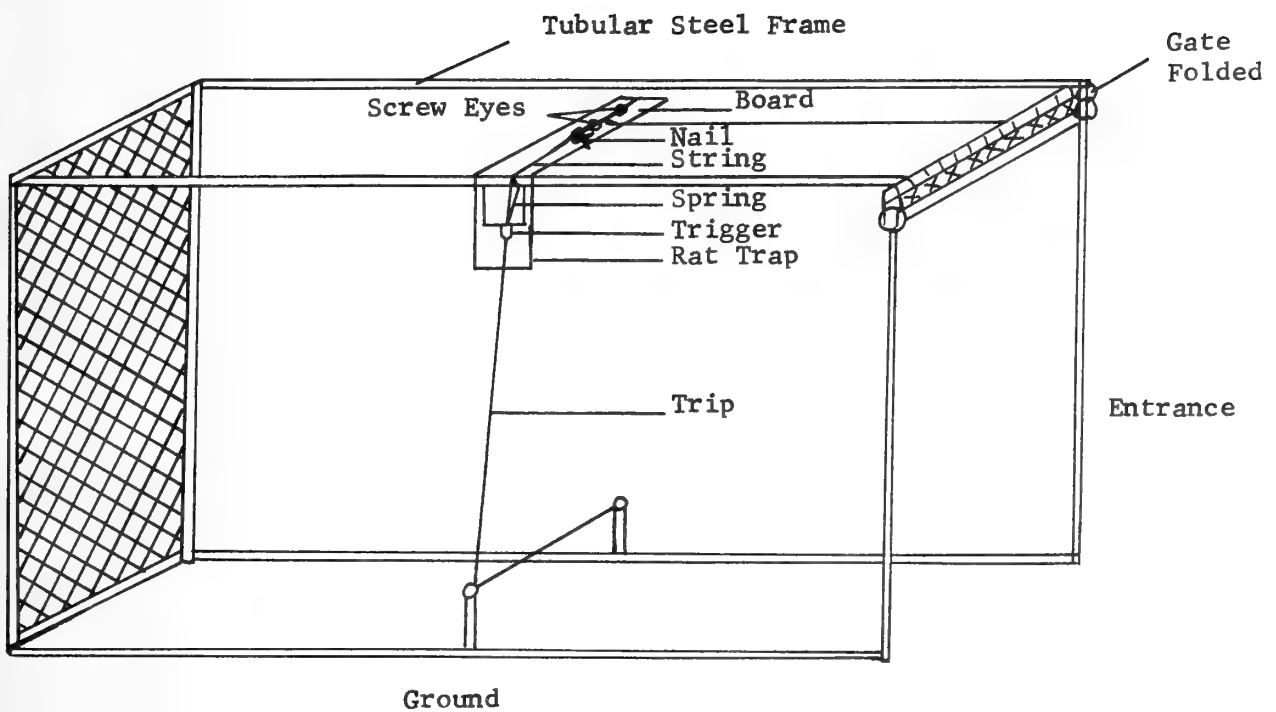


FIGURE I: Modified "Clover" Deer Trap Used in the Lindsay District
Tagging Project 1959 - 63

found that although the original clover trap was designed with an entrance at both ends to facilitate use on deer runways the single entrance version used in this project worked just as well. Deer were apparently drawn into the traps solely by the bait.

A mixture of apples, peanuts and rolled oats in corn syrup proved ineffective as bait. Ensilage also failed mainly because it tended to freeze rapidly. Freshly cut white cedar branches proved to be most satisfactory.

Care was taken to ensure that there were no projecting pieces of wire inside the traps on which deer might have injured themselves.

Traps were checked twice a day at first but it soon appeared best to check only once, preferably around eight o'clock in the morning. A piece of cotton netting was of some use in removing deer from the traps.

A standard metal cattle tag was applied with special pliers to the left ear of captured deer. It appeared that this method of trapping and tagging was a two-man operation, though on occasion the author was able to cope alone.

RESULTS:

A total of 113 deer were trapped in 559.5 trap-days over the five-year period (See table 1). This figure included 19 deer that escaped by breaking through the cotton netting used in 1959 and 1960. It also included four deer that had to be released because no tags were available and 37 instances of tagged deer being recaptured. One tagged deer returned to the same trap several times. A total of 53 deer were tagged. The greatest number of traps used was nine. The average number of trap-days per deer captured was 4.95.

In 1961 nine traps were set for 87 trap-days but no deer were taken. Average snow depth for the trapping period that year was only 5 inches. The average for all five years was 22.6 inches.

In 1963 the snow depth was 22.9 inches and in six consecutive days 23 individual deer were trapped using eight traps. On several occasions two deer were caught simultaneously in the same trap.

Thus it appeared that trapping success was greatest when snow depths were 20 or more inches. It also seemed better when logging operations in the trap area had ceased in early winter. This meant that by the time trapping began most of the available browse resulting from cutting had disappeared thus increasing the appeal of bait in the traps. Depending on snow and browse conditions the latter part of February and the months of March appeared to be the best time for trapping.

Of 47 tagged deer that were sexed, 24 were males and 23 females. Of the 35 deer aged, 20 were fawns and 15 were adults.

So far the recovery of eight tags has been reported (see Table 2). Although a recovery rate of 15.09 per cent may seem quite good, it is felt that better publicity during and after the project might have yielded more tags. None of the 20 tags used in 1962 have been turned in. Possibly some hunters shooting a tagged deer and not knowing about the tags may have been nervous about reporting it. Even at this late date some publicity might be worthwhile.

Out of eight recoveries six of the deer were shot legally outside the preserve, three of them being killed roughly 8 miles in a straight line from where they were tagged. It was reported that a tagged deer was shot

near Eels Lake, some twenty miles from the tagging location but no official record can be found. Two other tagged deer were shot by poachers presumably in the preserve and the tags turned in anonymously. The time between tagging and recovery varied from one to four years approximately.

TABLE I

SUMMARY OF ANNUAL TRAPPING & TAGGING RESULTS

1959-63 INCLUSIVE

	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>TOTALS</u>
Trapping Period	Mar. 1 - Apr. 5	Jan. 19 - Mar. 30	Mar. 1 - Mar. 11	Feb. 23 - Mar. 16	Feb. 27 - Mar. 6	
No. of deer captured	22	15	Nil	48	28	113
No. of deer escaped	11	8	-	Nil	Nil	19
No. of deer tagged	7	3	-	20	23	53
No. of deer released untagged	4	Nil	-	Nil	Nil	4
No. of tagged deer recaptured	Nil	4	-	28	5	37
No. of traps employed	6	7	9	9	8	9
No. of trap-days	180	62	87	189	41.5	559.5
No. of trap-days per deer captured	8.2	4.1	-	3.9	1.5	4.95
Average snow depth	29.8"	35"	5"	20"	22.9"	22.6"
Crust Conditions	N/A	A to C	B	A to B	B	-

TABLE IISUMMARY OF TAG RECOVERIES TO DATE

<u>TAGGED</u>			<u>RECOVERED</u>			<u>HOW RECOVERED</u>	<u>DISTANCE TRAVELED</u>	<u>APPROXIMATE TIME LAPSE</u>
<u>TAG #</u>	<u>DATE</u>	<u>SEX</u>	<u>AGE</u>	<u>DATE</u>	<u>LOCATION</u>			
237	Mar. 15/59	M	Fawn	Nov. 8/61	Methuen Twp.	Shot during season		2 yrs. 8 mths.
243	Apr. 1/59	M	Adult	Nov. 9/60	Lot 5, Con. VII S. Burleigh Twp.	Shot during season	3.5 miles	1 yr. 8 mths.
242	Apr. 3/59	M	Fawn	Nov. 12/62	North of Jacks Lake, Methuen Twp.	Shot during season	8 miles	3 yrs. 8 mths.
M 26	Feb. 25/60	F	N/A	Jan. /61	N/A (Mailed in Jan. 13/61)	Poacher? No Data given.	N/A	11 mths.
A 70	Mar. 1/63	F	Fawn	Nov. 4/64	Near Big Cedar L. S. Burleigh Twp.	Shot during season	5 miles	1 yr. 9 mths.
A 71	Mar. 1/63	F	Fawn	Nov. 8/65	Near Kashabog L. dam, Methuen Twp.	Shot during season	8 miles	2 yrs. 9 mths.
A 66	Mar. 2/63	M	Fawn	July 11/64	S. Burleigh Twp. (Mailed in)	Poacher (Anonymous)	1 mile	1 yr. 4 mths.
A 68	Mar. 2/63	F	Adult	Nov. 3/64	Near Kashabog L. dam, Methuen Twp.	Shot during season	8 miles	1 yr. 9 mths.

TECHNIQUE EVALUATION:

The method of trapping and tagging described above has two main advantages:

- (1) The equipment can be made highly mobile.
- (2) The outlay of money and manpower involved is relatively low.

These factors and the results achieved in the project would seem to indicate that this technique is ideal for carrying out migration studies in heavily populated winter yarding areas. Such studies can be an important part of any full-scale deer management programme.

FUTURE USE

In view of the present and future need for total deer management in the Lindsay District, it is imperative that movements of deer to and from large wintering areas such as the Peterborough Crown Game Preserve be resumed and extended. It should be made clear that this technique cannot be used to directly assess the value of game sanctuaries. When the project described was begun some hopes were expressed that the value of the Peterborough Crown Game Preserve might be assessed. The method used will show the value of the area as a deer yard rather than as a sanctuary.

It is hoped that this method can be used as the basis for long-term migration studies to be carried out as part of the annual Deer Management Project in this District.

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CAPTURING AND TAGGING OF DEER
PARRY SOUND DISTRICT 1968-69

by

G. WINTERTON
Biologist

A B S T R A C T

Parry Sound District continued their deer trapping program during winter 1968-69. Six modified Stephenson live traps were used throughout the winter. Tranquilizing deer with Cap-Chur guns and netting deer by means of a "gill" nets was attempted.

The traps did not capture any deer, nor were any deer tranquilized. However, two deer were captured by netting. Both tags and radio transmitters were placed on the animals.

The three methods of capture are evaluated with regards to cost, feasibility, production and welfare of the animals. Recommendations and plans for future work are presented.

INTRODUCTION

During the winter of 1967-68 Parry Sound District began a deer trapping program in Killbear Park (Carling Deer Yard #2) in order to tag deer so that movements and distribution could be studied. The program was late in starting and as a result only one deer (buck fawn) was tagged. This deer was captured seven times thus putting the one trap in use out of commission on these occasions. By the time this animal was removed from the vicinity, the majority of the deer had already left the yard as spring approached.

This program was continued and expanded in the winter of 1968-69 by using more traps and two other methods of capturing deer.

AIMS OF THE PROGRAM

The main aim of the program was to capture and mark as many deer as possible to assess seasonal movements, and to attach radio transmitters to some animals in order to follow daily movements.

The district was interested in discovering exactly when deer entered the yard, when they left the yard, and whether there was any migration to and from the yard during the winter period. Attempts would be made to correlate movements with snow depth and crust conditions.

Also of primary interest was the summer distribution of the deer from this yard, and whether the same deer returned to the same yard every winter or not. Basically it was important to see if an area could be delineated as being serviced by this particular yard.

STUDY AREA

The study area, as previously mentioned, was the Carling Deer Yard #2 principally in Killbear Park. It is located on a narrow peninsula jutting out into the Georgian Bay approximately 10 miles north of Parry Sound. The yard area, which varies with the severity of the winter, is approximately 2,000 acres.

The tree species of significance have been discussed in a report dealing with deer range improvement (Macfie, 1967). Briefly, the shelter, which is principally hemlock, is located in a number of areas throughout the yard. The rest of the yard is comprised principally of mixed low grade hardwoods with maples predominating. The primary food species is red maple. (See Fig. 1).

This yard was chosen for the following reasons:-

- (1) The yard is close to district office (20 miles).
- (2) The area is easily accessible since it is well serviced with roads.
- (3) There are usually a considerable number of deer in the yard.
- (4) There was a work crew in the park whose assistance could be obtained when necessary.

METHODS and MATERIALS

MODIFIED STEPHENSON LIVE TRAP

The principal trapping used was that of the modified Stephenson live traps. These consist of a large box trap (4' x 4' x 10') constructed of 2" x 6" timbers and 3/8" plywood, with a door at each end. (Fig. II). The doors are tripped by means of a No. 1 leghold trap.

As white cedar is considered quite a delicacy by the deer in Parry Sound District, the trap was baited with fresh branches of this species and also with apples at various times. Fresh greens (cabbage, carrot tops, lettuce, etc.) were also tried as bait on occasions. The deer were attracted to the traps by scattering some bait in their vicinity.

There were six traps in operation throughout the period from January 13th until the end of March. These traps were placed alongside major runways crossing the roads throughout the yard and were baited for one week prior to being set on the thirteenth.

The traps were checked daily throughout the week by the foreman of the crew in the park, and were checked on weekends by staff from district office.

Periodically the traps were freshly baited and checked to see that the doors were functioning properly.

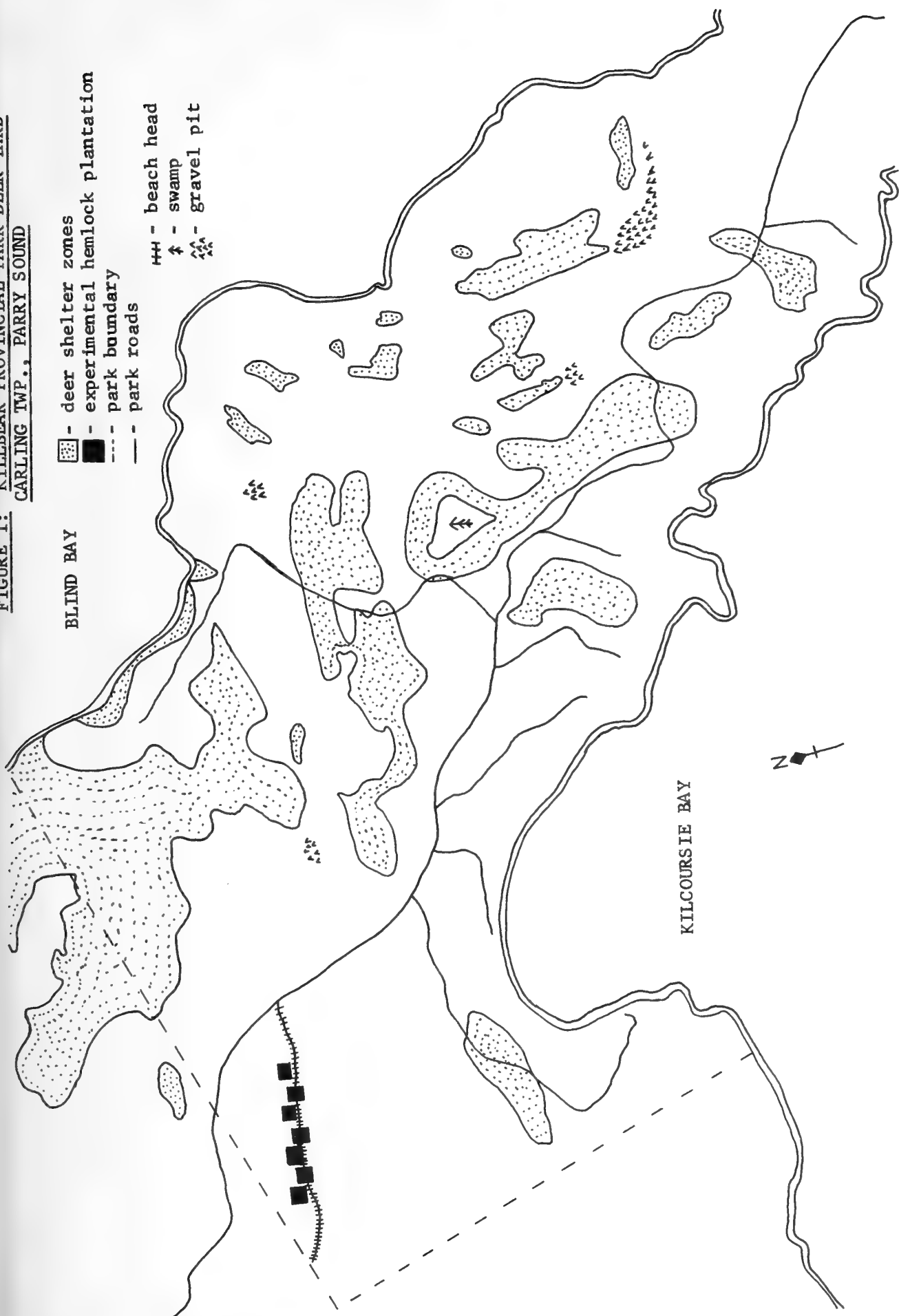
These traps came from the Cyanamid project in Lake Erie District and would cost approximately \$200.00 each to duplicate, including time and materials.

TRANQUILIZING WITH CAP-CHUR GUN

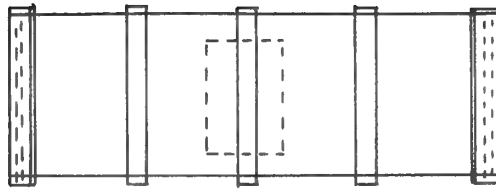
On February 17th, Mr. T. W. Townsend, Ph.D. student at the University of Guelph arrived in Parry Sound with two 32 gauge Cap-Chur guns complete with darts and charges. The drug used was Anectine (Succinylcholine chloride) at a dose of .0014 cc/lb. For two days we attempted to take deer by driving through the yard area in both the university vehicle and Department



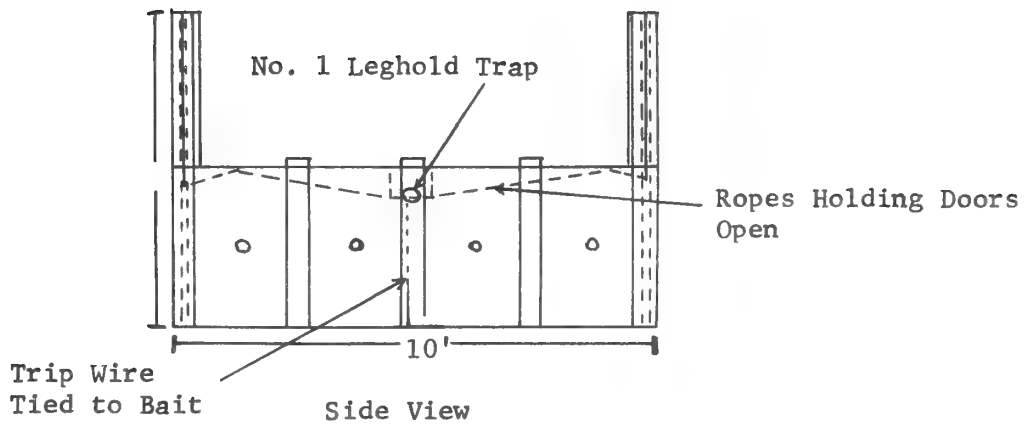
FIGURE 1: KILLBEAR PROVINCIAL PARK DEER YARD
CARLING TWP., PARRY SOUND



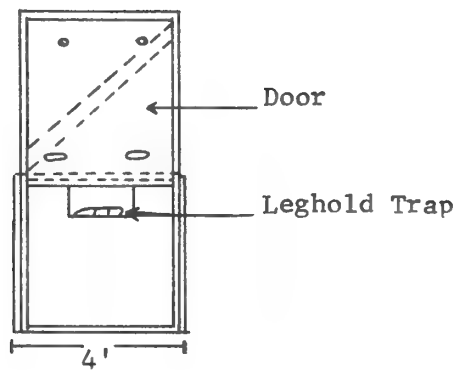




Top View



Side View



End View

FIGURE II: Modified Stephenson Deer Trap

vehicles. The deer in this yard are accustomed to vehicles travelling throughout the yard area and so attempts were made to shoot animals from the window.

One gun was loaded with an average doe load and the other with an average buck load. Each man carried both low powered propellant charges and high powered propellant charges. When a deer was sighted in suitable range the gun was loaded and the shot taken, attempting to hit the animal in the upper part of the leg or rump with the dart.

NETTING

On the morning of March 20th, two gangs of white nylon "gill" net (12" mesh) approximately six feet deep were hung throughout one of the shelter areas in the yard by Dr. H. Cumming assisted by some of his staff and Parry Sound staff. A drive was made later on in the afternoon. The net was left set overnight and another drive was made early the following morning. This was the extent of netting in the district as the deer had already started to leave the yard by this time.

TAGS and RADIO TRANSMITTERS

Two types of tags were used, both made by the Ketchum Mfg. Sales Ltd. A coloured, numbered, metal ear tag, of the type used in tagging cattle, was placed in one ear of the animal and a large orange rubbery tag correspondingly numbered was placed in the other ear. These tags are the same type used by Lake Huron District and were obtained from them.

The radio transmitters were basically the same as the ones developed by D. H. Johnston and used by G. Kolenosky in his wolf research program. (Kolenosky and Johnston, 1967). They were modified slightly to streamline them and make them lighter. The resistance was modified to give a suitable beat frequency when the collar was the proper size to fit a deer's neck. An experiment was tried using 1/16" Darvic (plastic-like material that can be shaped when heated) about 2-1/2" wide, as the collar with a .003" layer of brass shim stock as the radiating antenna. This eliminated the need for padding the collar with foam rubber and made a lighter more flexible collar for the radio transmitter.

RESULTS

The results were somewhat less than overwhelming.

In 468 trap nights there were no deer captured for a number of reasons which will be discussed later.

In two days with the Cap-Chur guns, only three shots were fired and no deer were captured. There are also reasons for this as well.

There were, however, two deer (bucks) captured in two days of netting. Both animals were subdued by chloroform and tagged by Dr. Cumming. One animal received a radio transmitter as well.

In addition to these animals there was one female deer that was pulled from the Gibson River (40 miles south of Parry Sound) by some fishermen and brought to Parry Sound. She was kept overnight, dried out and released the following day in Killbear after being tagged and having a radio transmitter placed around her neck.

None of the tags have been recovered, and the animals with radio transmitters were not heard from again in spite of repeated efforts using Cadre

portable radios throughout the yard and vehicle radios on the roads in the vicinity in attempts to pick up the signal. Although the aircraft has not been used in a systematic search, the pilot has switched to the radio collar frequency a number of times while in the vicinity of release.

DISCUSSION

Before discussing the merits of the different methods used, it is important to note that there was a considerable number of deer in the yard throughout the winter. It was not uncommon to see twenty or thirty deer in half an hour while checking the traps. On one occasion a Park's Branch employee counted 52 deer from his vehicle. Our crotising counts indicate that there were approximately 150 deer in the yard. As previously mentioned these deer became quite used to vehicles travelling throughout the park and could be approached closely by vehicle. They were, however, difficult to approach on foot.

TRAPPING

There were, as mentioned previously, numerous reasons why no deer were caught in these traps. To begin with they probably look too much like what they are - a trap, to the deer, a strange object that would appear as a dark closed tunnel that is fairly noisy underfoot and probably has a hint of man smell about it. Under some conditions this would not bother the deer, however, in the Killbear yard there has been an overtreatment for browse production, so consequently the deer are in fine physical shape to begin with and not easily enticed by food. We also discovered later in the season that the work crew was cutting cedar poles in one of the shelter areas, and so cedar was perhaps not as much of a delicacy as we had anticipated. The deer however would come around the trap and eat the scattered bait and occasionally would venture part way in the trap to reach the bait, but only on two occasions did they actually go right in the trap.

The deer appeared to be very interested in the apples but once again they would not enter all the way into the trap. The fresh greens did not appear to be touched at all by the deer.

On the two occasions that deer did enter the traps there was mechanical failure. In one instance, one of the doors was frozen open during a period of warm sunny days which melted the snow and cold nights which froze the melting snow that was in the tracks for the doors. In the other instance the steel trap for tripping the doors had become too weak to function.

Towards the end of the project the traps were continually tripped by a raccoon which promptly chewed its way out of the trap. This animal was thus capable of putting some of the traps out of commission each evening.

To summarize, it would seem that the traps are fairly efficient in other areas under certain conditions (as in the Cyanamid project where the deer were fenced in, relatively tame, and quite used to being fed.) However from our experiences this past winter, we feel that the animals in the wild would have to have a considerable shortage of food before any number of them could be captured by this method, then, perhaps, they would be of little value considering their physical condition. In view of the current deer range improvement program producing more good quality browse it appears that this technique will become of less value. The traps are large and cumbersome and must be checked frequently which necessitates being relatively close to a headquarters. In most cases this is where DRI work has been carried out most intensively and the deer are in the best condition. The cost to build and operate traps under these conditions would be difficult to justify when one considers the results.

TRANQUILIZING

Inexperience was one of the major factors that caused such poor results using the Cap-Chur gums. The author was completely inexperienced and although Mr. Townsend had tranquilized hundreds of captive animals, he had never tried the technique in the field.

The first dart fired had a low power charge and thus fell short of its target. A higher power charge was used for the second shot at closer range. Remembering the previous shot's trajectory, the shooter held a little high and the second dart went over the deer's back. On the third shot the dart was deflected by a tree.

There are a number of drawbacks to this technique. One of these turned out to be the vehicle in which we were riding. The deer were used to the noise of a dump truck going through the park and they scarcely shied from it at all. On the first day we used the University vehicle (much smaller and quieter) and the deer were quite wary. The second day we rode in the dump truck,

Although quite a number of deer were sighted in the two days (over 100) it was seldom that a good shot presented itself. In fact, everything must be perfect. The animal must be in the proper range for the power charge used, it must be of the proper sex for the load used, the animal must be standing, preferably broadside and there must be no bush between the shooter and the animal. A poor shot could cause the dart to break bones, sever major blood vessels or in some cases penetrate the animal almost surely causing death.

Even when a good shot is made the animal may not be found in time if tracking conditions are poor. Also to be considered is that the proper dose of drug does not always affect different animals equally. In some cases the drug may have no apparent effect on the animal at all and in other cases it may cause its death very quickly if not found in time.

This technique is relatively time consuming and has a number of major drawbacks. It may however be fairly effective if used with all due precautions under the proper conditions.

NETTING

The use of nets to catch deer is the technique which promised the least and produced the most. It was felt that most of the deer had left the yard by the time Dr. Cumming brought the nets to the district and that the chances of catching deer would be extremely poor.

To our surprise, two deer were captured in the afternoon drive. The second drive (the following morning) produced no deer. It was felt that the drive had been much too long allowing the deer to go around the drivers and that possibly some deer avoided the net purposely. This was not substantiated due to the profusion of tracks in the area.

In future it would probably be most feasible to limit the drives to about 200 yards maximum (taking the length of the net into consideration) and that the net should either be moved fairly frequently or that the deer should not be driven too often.

Because of the possible side effects of the use of chloroform, particularly pneumonia, it would be preferable to just cover the animal's head with burlap or some such material.

Although this method received only limited use in Parry Sound District it would appear to be most feasible when one considers the cost of the

materials (\$0.90 per yard), the amount of time consumed, the welfare of the deer, and the results obtained.

CONCLUSIONS and RECOMMENDATIONS

Parry Sound District has tried these three methods of capturing deer and evaluated them. In the future the traps will continue to be operated because the district already has them and the cost to maintain them is low as they can be checked by parks staff in the area. For the reasons discussed tranquilizing deer will not likely be attempted, particularly in view of the low cost and productivity of the technique of netting. It is hoped that much more netting can be carried out next winter.

It is recommended that research into producing a suitable radio transmitter for use on deer should be carried out. It is difficult to catch and tag enough deer so that the number of returns received will be of some value. As there is only a two week hunting season throughout most of the deer range (less in some cases), it will be difficult to actually assess seasonal movements of deer without the use of a transmitting device. In some cases, depending on weather conditions the deer may be back in the yard by hunting season, or may be on their way. It would not be known whether such returns represented the summer dispersal or not.

ACKNOWLEDGEMENTS

I wish to extend my thanks to all those who took part in the program this winter. It is impossible to personally acknowledge all those involved but there are three people who gave a considerable amount of time and expressed much interest in the project. These are: Mr. R. W. Swainson - radio technician, Parry Sound; Mr. J. Wager - foreman, Killbear Park, Mr. T. W. Townsend - Grad. student, University of Guelph.

This paper was reviewed by Mr. C. Douglas, Fish and Wildlife Supervisor, Parry Sound.

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CAPTURING - TAGGING DEER - PEMBROKE DISTRICT

by

L.L. TRODD
Senior Conservation Officer

M. L. WILDTON
Biologist

The reasons for deer tagging will be apparent to all in attendance. These vary little from district to district. We need not dwell on this area, but instead we shall review our methods, equipment and success.

The first method attempted was snare-style collars of woven nylon and assorted gauge wires. These had to be set on the runways during winter months. In the Pembroke district in 1964, two deer were tagged by this method, and in 1965, eleven more. From the thirteen tagged, one recovery was made and as luck would have it, the animal was shot within a few feet of where the snare had been set to put the collar on the deer.

Many problems plagued this method: getting the collar properly in a place where a deer could possibly put his head into it, the snap mechanism, the wire which held the collar in place and finally the variety of neck measurements. (Figures from Arnprior Checking Station show neck sizes from 11.0 to 24.9).

In summation, this method is practical if other materials could be applied to remove nuisance problems.

The second method used was the rubber collar. (Winter 1966-67). The collar was made of Simatco rubber tubing with a new catch mechanism. The trial models had a circumference of 19.5 inches. The material attaching the collar to the runway was made of monofilament line. This added to ease in camouflaging the unit.

Time did not permit complete assessment of this design but we did find a 10 inch square allows free passage of a deer's head and insures tightening on the smaller portions of the animals neck. Although no animals were tagged, this method shows promise of working and would be economical if one could direct intensive efforts to tagging alone.

The third method attempted was that of guns, darts, and drugs. We have been assisted in this area of tagging by Dr. T. L. Cashman of Pembroke.

The guns used thus far have been the CO₂ powered weapon, the .32 gauge shotgun with powder loaded shells, and the .32 gauge shotgun with multi-powered blank .22 shells.

The CO₂ gun is good for very close range and temperatures above 60°F. Below this many problems have been encountered, all relating to accuracy and distance that the dart is propelled. For roadside close range, "from vehicle shooting", this is a good weapon.

The .32 gauge shotgun with the powder charge was found to be very accurate and although we had only one range of shell to use, with some effort and much time, other loads could be obtained. In the early stages of using this weapon, one female deer was shot at and hit just forward of the hind

quarter and the animal died from internal bleeding. It was found that animals should not be shot unless they are beyond a range of 25 yards up to a maximum of 70 yards (with luck). No problems were encountered with this weapon other than a shortage of shells and of time that we were able to borrow it.

The .32 gauge shotgun with the .22 adaptor gives the user multi range choices: Low - green powder charge, 15 to 30 yards; Medium - yellow 25 - 60 yards; High - red-purple, 60-80 yards plus. With these choices also arise problems i.e. confusion as to distance animal is standing, size of dart to be hurled and the colour of powder charge in adaptor prior to firing.

The accuracy of this weapon is largely dependent on the user, the more practice one has the better one gets.

Once again time has not permitted us to use this weapon to a large degree although it would appear to have a good potential.

DARTS

Assorted sizes are available and we feel a 3 cc to 5 cc dart is best suited to the job.

The parts of the dart tail-feather, powder load, rubber stopper, cylinder and tip must be well cared for, otherwise time spent in stalking, shooting and hitting will be wasted with a dart malfunction. Until this spring no problem had been encountered with dart functioning but recently several cartridges that sat inside the dart have failed. We attribute this to carrying shells in an air tight first aid kit, which held in moisture thus making the powder damp, causing misfire.

The needle used is 1-1/8 inch long, no barb, but does have a small collar near the tip of the barb. These darts work rapidly enough that there is no need for a barb to keep this dart hanging on the deer. There is also the danger of the animal laying on a hanging dart and inflicting unnecessary injury.

The big drawback with the dart is the amount of time spent recovering them. They bury deeply in snow, burrow under leaf cover, and bounce in bushy or rocky areas. By far, more time is spent looking for the darts than is spent looking for deer.

DRUGS

The drug used in the dart is succinylcholine chloride (anectine) a muscle immobilizer which leaves the animal unable to control its voluntary muscles. A dose of 1 cc has proven effective in all instances of animals hit except one. The area of the body where the animal is struck appears to govern immobilization time. Generally a ham hit is best. Immobilization takes 3-1/2 to 6 minutes with an average of 4 minutes and lasts 25 to 45 minutes.

Drugs should be kept cool but have not failed to work when at a temperature of 70°F. Drugs that have been loaded into darts and not fired are disposed of. An antidote (prostigmin) is carried at all times in 1 cc vials.

DEER

The reaction of the deer to the tagging procedure varies greatly. Size and physical shape of the animal plays a big role in the success or failure. Animals tagged in summer and early fall did not show the same degree of distress as some tagged in mid to late winter.

Several pregnant does have been drugged and showed no ill effects.

We are advised by authority that the drug will not penetrate the placental barrier. Two milking does have been drugged and they also showed no ill effect and returned to care for their young. The fawns in these instances were not tagged since the possibilities of overdose, and the mother's refusal to reaccept the fawn after handling were uncertain.

Reaction to being struck by darts differs immensely. Some animals stand, others run until they are forced to lie down under the influence of the drug. The less the downed animals are handled the better, remembering that they are not unconscious, only immobile and anxiety is at a peak. (Cases are on record of humans being given this drug in error and the reaction to the inability to move while conscious has caused mortality from shock and stress, with no connection to the drug affecting vital organs).

After the animal is in a comfortable and normal lying position do your tagging. Wounds are sprayed with disinfectant and bleeding is negligible. In warm weather fly dope is applied to the hair in the area at the wound. Recovery may be easily watched from a point out of view of the deer, leaving it in peace and quiet.

TAGS

Metal ear tags are fastened, which hold a numbered coloured ribbon 6" x 1" in place. These make the animal visible without having to kill it to obtain a metal tag number. At the same time, rubber collars are being put on to gain information on this style of tagging.

Several sightings of deer with ribbons on their ears have been made. These ribbons have been noted at a distance of 1/2 mile in open areas. These reports have not continued beyond one season. Though we have little proof it is felt that they must have fallen off.

Most bucks when in velvet, become hostile to any part of the procedure once the drug starts to take effect.

Animals must be located prior to total absorption of the drug or they are unable to make a noise or move and the spot where they fall may be dangerous i.e. sharp sticks, water, position of animal, etc.

FOOT TRAP

A fourth method, we call the Foot Trap Method, has been attempted. This method once again uses the rubber tubing, only this time we try to attach the rubber to the animal's foot. In principal, the deer steps on the "pan" of the trap. This triggers the release of the band, thereby attaching it to the foot.

We are still in the planning stage of this method, in fact this may be said of all methods, however we did make two or three sets of this style last winter. The deer did step on the trap set in the runway but for reasons which we are not yet sure, the rubber band is still in our possession.

In conclusion, may I say for Mr. Wilton and myself, that the biggest problem confronting tagging efforts in Pembroke is the lack of time to perfect methods and actually do the tagging. All other components such as deer, equipment, and methods are ample.

TAG NO. 8IX

Put on a deer at Spoor Lake, Lot 5, Concession 6, Stratton Town -

ship south-west of the lake. This lake is situated inside Algonquin Park 1-1/2 miles from the East Border and 1-1/2 miles south of the Petawawa River. The area is generally directly north of the centre of the Racehorse deer yard.

The animal was a Spike Horn Buck tagged July 29th, 1967 at 3:30 p.m. The ear tag, plastic tag and rubber collar (49065) were attached by L. Trodd, Pembroke, after immobilizing the animal with anectine (1 cc).

The ear tag was recovered off shore on the Ottawa River in Buchanan Township on January 14th, 1969 by Lorne O'Brien, Conservation Officer, Pembroke. This area is east of the Atomic Research Centre. Deer commute between a yarding area here and a yard across the River in Quebec. The deer had been killed by wolves and ice condition at the carcass would not allow safe travel to attempt to locate the rubber collar. The head had been dragged by foxes closer to shore and the tag was recovered when the officer attempted to age the animal.

The buck had travelled approximately 16 miles in a straight line over a period of 17-1/2 months. With this meagre information we are safe in saying that this animal commuted between yards. We may also say that a deer which was once in Algonquin Park left and must have been huntable at least one fall.

NETTING WHITE-TAILED DEER IN ONTARIO

by

H. G. CUMMING
Big Game Biologist

PURPOSE

To see if methods used to catch roe deer in nets could be adapted for catching white-tailed deer.

SPECIFIC QUESTIONS TO BE ANSWERED

- (1) What mesh size and strength of net is required to hold white-tailed deer?
- (2) What is the best way to set a net so that it will "fish" properly?
- (3) Can white-tailed deer be driven into a specified area?
- (4) Can deer be caught in nets without using drives?
- (5) How can deer be handled after they are caught in nets?

MATERIALS

Two kinds of netting were tested. Two standard whale nets, 140 yards by 21 feet, were split lengthwise to produce 600 yards of 6-foot wide useable net. This net was 375 pounds test and 19 inch stretch mesh. The price was about \$26. per hundred yards of useable net.

The second type of netting had to be specially woven by the company. Two lengths were ordered, each 100 yards by 12 feet and these were split lengthwise to produce 400 yards of useable nets. These nets were 468 pounds test and 12 inch stretch mesh. The price was about \$90. per hundred yards of useable net in the quantity ordered, (i.e. about \$375. per two hundred yards). Net prices are only approximate since they are by the pound. Nets are available from John Leckie Limited.

Other materials used were 500 yards of quarter-inch nylon rope for sidelines on the heavier nets and 500 yards of hemp rope for guidelines. "Capchur" guns and long-handled prods holding drugs were prepared for handling deer in the nets. The drug used was a tranquilizer called "Tranvet". Plastic garbage bags with cotton wads soaked in chloroform were tried as an alternative. Standard ear tags with streamers were used for marking.

METHODS

Attempts were made to catch deer in the nets during March of 1967, 68 and 69. In 1967 nets were tried in Lake Huron, Parry Sound, and Lindsay Districts. In 1968, due to light snowfall they were tried only in Lake Huron District. In 1969 they were tried in Parry Sound and Pembroke Districts.

Nets were split into 6-foot widths for use and were handled by coiling them into burlap sacking. Sidelines of quarter-inch nylon rope were bound onto the top and bottom of the heavier nets. Nets were set vertically, with care being taken to have the lower edge in contact with the snow as much as possible.

They were hung in 4 different ways - (1) on 2 by 2 inch poles set upright in snow, (2) on tree branches, (3) on quarter-inch hemp guide ropes which were first strung out and looped over branches and around trees, using plastic rings to clip the net sidelines to the guide ropes, (4) on guide ropes using No. 10 thread to tie the sidelines to guide ropes.

Five different kinds of locations were tried: (1) Along a woods road in a deer yard, (2) in a part of the deer yard not continually used by deer but with well-used trails through it, (3) around the edges of a deer yard, (4) where deer were actually seen, (5) where fresh tracks of deer were located.

Drives were carried out in four different ways: (1) using three power toboggans to drive the deer from thick bush, (2) with about 6 men on snowshoes walking within sight, or at least hearing distance, of each other through the deer yard, (3) a short drive of about 1,000 yards using 3 men on snowshoes, (4) several individuals on snowshoes, each walking independently.

To catch deer without drives, two kinds of sets were tried: (1) nets were hung in the same way as for drives, left overnight and checked in the morning, and (2) a cedar tree was felled and nets were hung in a complete circle around it.

We tried three ways of handling deer in the nets: (1) by injecting the Transet, (2) by placing over the deer's head a plastic garbage bag with a cotton wad soaked in chloroform, (3) without drugs by pushing the deer into deep snow with snowshoes.

RESULTS

In the 5 days during 1967 when whale nets were actually in place for capturing deer, 20 deer entered the nets and became partly entangled. Only one was actually caught and handled. In view of a mild winter in 1968 the specially woven nets were set on only two days. The one deer which got in them was not caught. In 1969, the specially made nets were set on 4 days during which 9 deer entered the nets and 4 were captured. Of these four, one was injured and had to be killed. The other three were tagged and released.

In two places nets hung on poles were knocked over by deer which then kept on going. Nets hung on tree branches were firmly held and were not pulled down by deer. The use of a guide rope greatly facilitated setting the nets. Plastic rings were easy to apply, but the one deer which ran into the nets when the rings were in use was not caught. Tying the net up with thread was time consuming and uncomfortable in cold weather, but 4 deer were caught using this method of attachment.

After an afternoon of driving, 4 deer were finally chased into nets which were set along a wood road. Only two deer were driven toward a net set in a less frequently used part of the deer yard, and one went under the net while the other turned back. We were unable to drive deer into nets set around the edges of a deer yard. All of the 9 deer which entered nets in 1969 did so with nets placed either where deer had been seen immediately before or where very fresh tracks indicated their presence.

Three men on power toboggans chased deer about all afternoon before finally driving 4 into the nets. They failed to drive any into nets on a second occasion. Six men walking in line drove 1 deer into nets on each of 2 drives. On another drive they brought about 12 deer toward the nets but the deer turned off and by-passed the end of the nets. Three men drove 4 deer into nets in 2 drives and 7 more passed through a gap in the nets. On another drive no deer reached the nets. At another set, 3 men drove 4 deer into nets in one drive and 5 more passed by the end. Three men working independently were

unsuccessful in getting any deer into the nets, although 2 deer passed close by the end of the nets.

Nets hung overnight in 1967 had 4 deer in them but all escaped. In one afternoon, 5 deer entered nets and escaped while the men were having dinner. In 1969 one deer was caught in a net left hanging overnight. It was tagged and released. When the cedar tree was felled in 1967, three deer became entangled during a 24-hour period. One was seen in the net but all escaped.

The first deer caught in 1967 was injected with "Tranvet". After about 15 minutes, this 4-6-year old, 120 pound doe was tranquil and easy to handle. It was sacrificed for a study of reproduction. In 1969 one deer escaped while three men stood looking at it in the net, two of them firing dart guns at it. Plastic bags with chloroform did not act fast but eventually made deer easy to handle. The act of placing an opaque bag over their heads quieted them to some extent immediately. In all cases, the first problem was to approach the deer. All four deer tagged in 1969 were easily approached because they were well tangled in the nets. Pressing the deer into deep snow with snowshoes and sitting on them proved effective for short periods.

CONCLUSIONS

Whale netting is not adequate for catching white-tailed deer. The large mesh allows deer to go too far through; the knots slip releasing the deer; and the strands can be broken. The specially made nets are very satisfactory. No deer got through the nets nor broke any strands.

The use of 2" x 2" poles is unnecessary and not very effective. Hanging the nets directly on trees is not effective either. The nets must be hung so they will fall when deer hit them. The use of guidelines and sidelines on the nets greatly facilitates this kind of arrangement. The use of thread to hold the nets up is effective. Plastic rings are faster and easier to use but they have not yet been sufficiently tested.

To catch deer, nets must be set where deer are normally moving about. It is difficult to drive deer from one area to another but it is easy to drive them back over trails they have just used. Therefore, shorter drives are more effective than long ones. Power toboggans are not very useful for driving deer. Several men on snowshoes are effective over short distances but cannot expect to drive deer long distances. Even three drivers can be effective when nets are properly placed.

Deer can be caught without drives by merely hanging nets in areas which they normally frequent. Whether this can be done frequently enough to be useful in tagging reasonable numbers of deer was not established in the trials thus far.

Although tranquilizers are effective in handling deer, they are too slow acting, and are not necessary. "Capchur" guns are not very useful. The chloroform in plastic bags works well, but again rather slowly. The mere act of putting an opaque bag over the deer's head seems nearly as effective. The problem of approaching partially caught deer was not solved, but deer well tangled up in the net, are no problem. Using heavier netting and setting the net so it will fall on the deer facilitate this result.

Although some details remain to be worked out, the technique of catching white-tailed deer in nets has been shown sufficiently effective to be considered an operational method. It should be possible with practice not only to catch occasional deer but to catch them in large numbers. The facility with which deer can be caught was illustrated by the last attempt where two deer were caught in the first drive in an unfamiliar area after several traps

had yielded no tagged deer during an entire winter.

SUGGESTIONS FOR FUTURE WORK

Any district which wishes to try catching deer with nets should apply to Maple for loan of the specially made nets on hand there. Districts which plan to do a lot of work should order their own. Even 100 yards can be effective but 300-400 yards provide more flexibility and better chances of getting deer.

Nets should be set where deer are known to be present and short drives mounted with as many men as are available. It is useful to leave one or two men near the net so they can approach any caught deer more quickly and help prevent injury to the deer. A "throw net" made of a 6' x 6' square piece of the netting should be tried as a means of handling partially caught deer. There is room for further experimentation on handling methods but even a burlap sack over the deer's head may prove sufficient.

Several districts should be encouraged to try netting deer in large numbers next winter.

ANALYSIS AND CRITICISM OF BROWSE SURVEYS
DONE IN CARLING #2 DEER YARD
PARRY SOUND DISTRICT

by

Allan EDIE and John HENDERSON

INTRODUCTION

Starting in the winter of 1962 and continuing through the following five winters, non-commercial cutting to stimulate the growth of deer food was carried out in Carling #2 Deer Yard, Parry Sound District (Killbear Point Provincial Park Deer Yard). The treatment consisted of the clear cutting of approximately twenty-six acres of hardwoods adjacent to hemlock shelter areas throughout the yard. In 1962 a pre-treatment browse survey was carried out and in 1969 a post treatment survey was done. Both surveys employed a modified version of the Passmore-Hepburn method for Appraisal of Winter Range of Deer. Instead of counting the twigs on each stem and determining the percentage of twigs browsed per stem (as was the original method), a simple stem count was made and each stem was classified into one of four categories according to the intensity of browsing. The purpose of this report is to analyse the results of the surveys as well as possible and to discuss the limitations of the survey method used.

METHOD OF SURVEYS

To facilitate the interpretation of this report, the following definitions should be studied.

- Stem - A unit of vegetation consisting of a single branch or trunk at its origin from the ground or at its point of growth from a stump or felled tree in the case of coppicing, and producing twigs available to deer, (i.e., twigs between 1-1/2 feet and 6-1/2 feet above ground level).
- Browsed Stem - A stem with one or more twigs that have been browsed, but not a mutilated stem. (Editor's note: standard definition of "browsed stem" includes mutilated stems).
- Mutilated-- Stem - A stem which has been so heavily browsed that nearly all the twigs are removed and usually the plant is disfigured, stunted or both.
- Killed Stem - A stem that has been killed by over-browsing.
- Living Stem - A stem that is alive at the time of the survey. This category includes unbrowsed, browsed and mutilated stems.

The 1962 and 1969 surveys were both conducted in the same manner. In both surveys, sample plots measuring one chain by 2 feet were laid out along the same compass lines in the deer yard area. The plots were positioned by pacing at every fifth chain along the compass lines. The actual size of a plot was measured by laying out a rope one chain long and measuring the width of the plot with sticks marked off to give a plot 2 feet wide. The results of the two surveys have been compiled in Table I. of this report.

ANALYSIS OF THE 1962 and 1969 SURVEYS

The intended purpose of the Killbear surveys was to measure a "hoped for" increase in browse supply due to the deer yard improvement work carried out in the yard. This essentially means that the surveys were supposed to reveal in quantitative terms the amount of browse available before and after the deer yard improvement work. The reasons why this information cannot be obtained from the surveys will be discussed later in the criticism of the survey method. Although the survey method cannot fulfil its original purpose, other information seems at hand in the results.

The browsing pressure in the yard has increased markedly. The following calculations are in no way to be considered as accurate but only as a good indication of the browsing pressure. This indication is probably reliable since the major source of error is known and probably affects the results in a predictable way. The major error is the one that is introduced by variations in the amount of food that a stem yields. It was apparent, while doing the 1969 survey, that the stems in the areas treated for browse were bushier, with larger, heavier twigs than the stems that grew under the normal overstory of hardwoods in the yard area. This greater food supply per stem would tend to absorb increasing browsing pressure making any calculated increase in food use smaller than it is in reality. For this reason the following estimates can probably be considered as conservative. In obtaining the following estimates of increased browsing pressure only the four species of maple (striped, sugar, mountain and red) were used because they are the major suppliers of winter food for the Killbear deer, thus the maples should provide a reliable index of any change in browsing pressure.

BROWSED PLUS MUTILATED MAPLES PER ACRE

1962 - 629 browsed and mutilated stems per acre.

1969 - 1737 browsed and mutilated stems per acre.

increase = $1737 - 629 = 1108$ browsed and mutilated stems per acre.

$\frac{1108}{629} \times 100 = 180\%$ increase in browsed and mutilated stems

NUMBER OF LIVING MAPLE STEMS PER ACRE

1962 - 2551 living stems per acre.

1969 - 2248 living stems per acre.

decrease = $2551 - 2248 = 303$

$\frac{303}{2551} \times 100 = 12\%$ decrease in living maples.

Since the increase in browsed and mutilated stems per acre is not coupled with an overall increase in the number of maple stems, it seems that the browsing pressure has almost tripled. Another way of examining the increase in browsing pressure is utilized below.

PERCENT OF LIVING STEMS BROWSED (AVERAGE FOR MAPLES)

1962 - 12.5% browsed.

1969 - 41.3% browsed.

$$\text{increase} = 41.3\% - 12.5\% = 28.8\%$$

$$\frac{28.8\%}{12.5} \times 100 = 230\% \text{ increase in percent of living stems browsed.}$$

Again the indication is that browsing pressure has increased approximately threefold since 1962.

SOME OBSERVATIONS ON CERTAIN SPECIES

RED MAPLE

Grouping of the four maples above obscures the fact (apparent in Table I) that while all maples combined decreased in living stems per acre, red maple, the species that browse treatment was concentrated on, increased from 367 to 665 stems per acre.

SUGAR MAPLE

Virtually all of the loss in living sugar maple stems per acre (1001 in 1962 and 611 in 1969) occurred in six maple plots (of 116 in 1962 and 126 in 1969) situated in a stand that supports dense sugar maple regeneration that followed logging in the 1950's. In 1962 living sugar maple stems in these six plots totalled 187, but by 1969 the young maples had grown up to the extent that only 62 living stems bore available deer food. If these six plots were removed from the survey, living sugar maple stems would be 495 per acre in 1962 and 476 in 1969, or about the same.

STRIPED MAPLE AND MOUNTAIN MAPLE

Both these quality deer foods lost ground in stems per acre. However, stems on treated sites were much more productive of food than in 1962 (not revealed by the survey method) and utilization was much tighter.

BIRCHES

The marked increase in white birch can be credited to coppicing in treated areas. Good yellow birch stems were left standing in treated sites. Had they been cut to the same extent as white birch an increase would likely have resulted instead of a slight decrease (from 102 stems per acre to 89).

ASPENS

Aspens, not important deer food in Killbear, increased markedly following treatment, although they remain relatively insignificant. Utilization by deer of these open grown specimens is quite high (44% browsed for large tooth aspen and 26% for trembling aspen).

HEMLOCK

Mutilation of small hemlocks has risen sharply since 1962, probably reflecting a much larger deer herd utilizing an only moderately increased number of slow growing specimens.



MISCELLANEOUS

Blackcherry, chokecherry, ribes, blackberry, raspberry and elderberry have increased markedly as a result of clear-cutting for browse production. The apparent increase in mountain holly, a slow growing denizen of spruce swamps, is likely the result of a few more plots chancing to fall in dense patches of it than was the case in 1962.

CRITICISM OF THE SURVEY METHOD

The purposes of browse surveys vary but for the most part they are intended to answer the following questions:

- (1) What species of vegetation are available for deer browse and what is the frequency of each?
- (2) In the aggregate, how much browse is available for the deer? (i.e. what is the carrying capacity of the yard?).
- (3) How much of the browse has been used by the deer,
 - (a) on the whole?
 - (b) of each species?
- (4) What changes in the above factors have resulted from environmental manipulation such as that done in the Killbear Deer Yard?

Due to the sources of error in the stem count method used in the Killbear Yard, almost none of the above questions can be answered. There are two basic sources of error in the stem count system:

- (1) The significance of a stem.
- (2) The definition of unbrowsed, browsed, mutilated and killed stems.

The significance of a stem raises problems because the amount of browse on a stem varies widely from species to species and from stem to stem within a species. One stem could consist of a large bushy food-laden plant and another could consist of a sparse plant with only two or three twigs but both plants are considered equal in the definition of a stem. Absolutely no reference is made to the amount of browse on a stem. This problem is particularly acute where deer yard improvement has been undertaken, as in the Killbear Yard, because the clearing of the overstory results in bushier, more vigorous plants with longer, heavier twigs that supply many times the food produced by the same species grown in the shade.

The tallying of stems under the four headings, unbrowsed, browsed, mutilated and killed has associated with it problems similar to those associated with stem definitions. Each heading has its own sources of error, but the main problem is that none of the four categories gives any reliable index to browse availability or browse utilization. A second type of problem with these headings is found in examining some of the browse survey reports in "Resource Management Report". The problem arises in that the interpretations of the four categories are varied. This problem of interpretation was met in compiling the results from the Killbear browse surveys. It was only after a thorough discussion of the factors involved that a final interpretation was arrived at.

The obvious increase in browse production was not revealed by stem counts because of the compounding of errors introduced by the interpretation of the term "stem" and by the classification of stems. A twig count would have shown an increase, but twigs also vary greatly in the amount of browse they provide. In this light it seems obvious that counting methods must be either modified drastically or replaced by a better system. One of the possible alternatives that looks promising is the 'clip and weigh' method that is being tried in Croft #3 deer yard in the Parry Sound Forest District. If the system can be made reasonably accurate statistically without rendering it impractically

expensive, the survey would give an estimate of the weight of the browse available in the yard. It seems that the clip and weigh method should also be capable of measuring the amount of browse utilized over a winter, but a method of obtaining this information has not yet been worked out.

REFERENCES

MACFIE, John, 1962 - Spring Deer Yard Surveys, Parry Sound District

PASSMORE, R.C., HEPBURN, R.L. , 1959 - A Method for Appraisal of Winter Range of Deer. Research Report No. 29.

Miscellaneous Reports, compiled 1969 - Resource Management Reports, Ontario Department Lands and Forests.

1962 SURVEY - 116 PLOTS

1969 SURVEY - 126 PLOTS

	FREQUENCY INDEX		LIVING STEMS PER ACRE		PERCENT OF STEMS MUTILATED		PERCENT OF STEMS KILLED		MUTILATED AND BROWSED STEMS PER ACRE		PERCENT OF ALL LIVING STEMS		PERCENT OF STEMS BROWSED	
	1962	1969	1962	1969	1962	1969	1962	1969	1962	1969	1962	1969	1962	1969
Balsam	.112	.071	80	31	0	25.0	0	0	26	16	1.9	.6	32.1	25.0
Hemlock	.163	.150	170	244	11.7	62.3	0	7.9	60	173	4.2	4.6	23.3	8.6
Spruces	.017	.008	9	3	0	0	0	0	0	0	0.2	.1	0	0
White Pine	.008	0	6	0	0	0	0	0	3	0	0.1	0	50.0	0
Juniper	.043	0	14	0	0	0	0	0	0	0	0.3	0	0	0
Aspen	.034	.095	14	81	20.0	25.8	44.4	13.9	3	42	0.3	1.5	0	25.8
Hazel	.017	.016	11	13	0	20.0	0	0	3	3	0.3	.2	25.0	0
Yellow Birch	.129	.13	102	89	13.9	11.8	7.7	2.9	20	68	2.5	1.7	5.5	64.7
White Birch	.060	.087	71	230	0	28.4	0	0	11	178	1.8	4.3	8.0	48.9
Alder	.025	.008	13	21	6.7	0	0	0	3	0	1.1	.4	0	0
Red Oak	.051	.071	94	23	33.3	33.3	2.9	25.0	54	18	2.3	.4	24.2	44.4
Iron Wood	.025	.16	37	106	0	2.5	0	0	8	31	0.9	2.0	23.1	27.5
Ribes	.008	.079	8	136	0	0	0	0	8	8	0.2	2.5	0	5.8
Juneberry	.093	.16	176	5	11.3	0	1.6	0	77	5	4.4	.1	31.7	100
Raspberry	.008	.040	8	131	0	0	0	0	3	5	0.2	2.4	33.3	4.0
Pincherry	.043	0	23	0	0	0	0	0	3	0	0.6	0	12.5	0
Blackcherry	.4	.095	0	115	0	0	0	0	0	34	0	2.2	0	29.5
Striped Maple	.431	.39	810	676	17.2	30.6	4.0	4.1	276	532	20.1	12.6	16.8	48.1
Mt. Maple	.172	.18	373	296	19.9	40.4	.8	6.6	136	236	9.3	5.5	16.8	38.6
Sugar Maple	.310	.45	1001	611	6.0	20.4	1.4	4.5	100	393	24.9	11.4	4.0	43.4
Red Maple	.344	.42	367	665	18.6	51.6	2.3	4.1	117	576	9.1	12.4	12.4	35.0
Black Ash	.060	.024	57	8	25.0	0	0	0	28	3	1.4	.1	25.0	33.3
Honeysuckle	.069	0	74	0	11.6	0	0	0	11	0	1.8	0	3.8	0
Viburnum	.060	.19	153	283	3.7	22.9	1.8	1.8	43	207	3.8	5.3	24.1	49.5
Elder	0	.032	0	70	0	3.7	0	0	0	26	0	1.3	0	33.3
Lt. Aspen	.034	.056	14	65	0	16.0	32.5	0	0	39	0.3	1.2	0	44.0
Beech	.172	.198	160	203	1.8	10.3	0	0	11	55	4.0	3.8	5.3	16.7
Elm	.008	.024	3	8	0	0	0	0	0	0	0.1	.1	0	0
Chokecherry	.008	.056	3	122	0	0	0	4.1	0	89	0.1	2.3	0	72.0
Sumach	.008	.008	0	3	0	100.0	100.0	0	0	3	0	.1	0	0.3
Hobblebush	.043	.079	40	60	35.7	39.1	0	0	14	50	1.0	1.1	0	43.5
White Ash	.017	.18	17	138	33.3	22.6	0	1.9	6	94	0.4	2.6	0	45.3
Blackberry	.008	.048	8	325	0	0	0	0	3	84	0.2	6.1	33.3	25.6
Mountain Holly	.017	.071	74	569	0	4.1	0	0	0	218	1.8	10.6	0	33.8
Unidentified	0	.056	0	31	0	0	0	25.0	0	8	0	.6	0	16.7

MANAGEMENT OF DEER RANGE -

THE FORESTER'S ROLE

by

L. J. POST
Deer Range Ecologist

We have heard the words "multiple land use" often today as they apply to forest management. It is a fact that public ownership demands more and more the multiple use of crown lands, and many foresters believe that this is an encroachment on the real function of the forest: timber production. However, looking upon the forest as a source of many benefits is now necessary. On that theme, I want to speak for the next few minutes about deer range management as an example of other purposes of forest management, as legitimate as timber production. I will show, in general terms, what deer range management is and what it can mean to a forester, and more specifically how it is practised at present in Ontario and elsewhere.

The most pressing demand in deer management is becoming the management of deer habitat. Although there are many mortality factors affecting a deer population, the important ones of hunting, predation, and road kills together remove fewer deer than the annual increase of a healthy herd. The winter food supply is the greatest limiting factor. Winter food must not only be abundant, it must be abundant close to small areas where deer habitually concentrate in winter.

Before I discuss the silviculturist's and forest manager's role in deer range management, it will be of benefit to first consider what deer need. In wintering areas deer are sometimes confined very strictly by deep snows that prevent their travelling. The habit of deer to concentrate in winter yards in the northern part of their range poses deer management problems. Deer become particularly vulnerable when logging is stopped for whatever reason. The local food supply will decrease because no new browse-size material is added. In severe winters so many deer may die that much of the food they cannot reach that year because of restricted movement, grows too tall the following summer. This browse is then lost for the following years too. This vicious downward spiral may continue until the deer have disappeared altogether from previously good range.

Food is only one of the two major requirements of deer. In fact, it seems that deer are not motivated at all by food supplies in their search for wintering areas. It is probable that they look for protection only and eat whatever they come across. In the south, cover need be merely escape cover, but near the northern limit of their range deer need the type of shelter that seems to reduce the depth of snow on the ground. A combination of deep snow, say 22 - 24 inches, and a crust they break through when walking, is murderous.

I am not familiar enough with the long term trends of the deer herd in Nova Scotia to give you a local example of how habitat influences deer and their range. The history of deer in Ontario, however, serves as a good example. When the white man came, deer were abundant only in a narrow strip along Lake Ontario. They moved north in the wake of the logging industry and

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established themselves up to north of Sault Ste. Marie. White pine logging, hardwood logging, and pulpwood logging, all selecting the best stands and the best trees, created many openings and stand edges, producing browse; yet they left enough unwanted material to form the winter shelter without which there can be no deer. The peak in the deer herd occurred in the 20's and 30's. These were the good old days of the deer hunter. The deer herd has been declining since then because of decreased lumbering, so that much browse has grown out of reach and little is created any more. Also the shelter initially left by the loggers is now being logged because large stems are becoming scarcer.

We can now put together a picture of what, in the north, determines the capacity of an area to support deer. We need coniferous shelter that, among others, reduces depth of snow on the ground, and browse has to be growing nearby. Cover species in decreasing order of importance are hemlock, cedar, pines, spruces, and balsam fir. The food preferences of deer may vary from one area to another, but in general the most desirable browse species are the maples, Viburnum spp., Amelanchier spp., various dogwoods, and both elders. Red cherry is important everywhere, and yew and cedar are important as long as they are plentiful. There is a long list of less important species.

Deer winter in the same yards, year after year. What makes a deer yard is a complicated question, but it will suffice now, to say that a yard is where deer concentrate in winter. On the premise that we want deer in reasonable numbers, these deer yards are precious and must be maintained. It is a truism that stands of timber cannot be preserved forever. To maintain them in perpetuity, they must be managed. But managing them for deer habitat does not preclude the harvesting of timber. On the contrary, cover stands, always small, lend themselves well to an intensive type of timber management, particularly adapted to small holdings. Because clear cutting will destroy the yards, a selection type of management system should be followed.

The older the stand is, the more pressing the need to start managing it, for it takes time to grow trees large enough to provide cover. Strip cutting and patch cutting are ideal and clear cuts of up to 50 acres are acceptable in large yard complexes where there are many small packets of cover. This is asking the timber manager to accommodate the deer range manager, yes. Accommodating him does not cost in terms of wood production, however, although in some cases it will cost in terms of a lesser efficiency where normally large-scale clear cutting is practised.

The price is small. First, in southwestern Nova Scotia, a large portion of the province, I suspect that there are no yarding areas with critical amounts of snow. Second, the areas of coniferous cover needed by deer are, in the aggregate, only a very small percentage of the forest land where they are found. Third, cover areas are usually small; and in small holdings, deer yard management objectives are easily compatible with timber management objectives. And finally, in new licences or in licence renewals on crown land, the need to manage the yards for wildlife purposes can be considered in the negotiations for the conditions of the licence. In other words, the licensee need not pay for the work in range management.

The northern hardwood forest is not the best year-round habitat for deer, because of the periodic deep snows and attendant periodic large die-offs of deer. This same forest type offers the managers good opportunities though, for amelioration of the habitat, so that the large die-offs can be prevented or lessened. As far north as we are in Nova Scotia, New Brunswick, Quebec and Ontario many of the trees in this forest type are unsuitable for veneer or lumber, but there is an abundance of food species. Treatment for browse production in the absence of commercial operations consists normally of cutting cull hardwoods, which promotes sprouting from the stem base, and which releases shrubs already growing on the forest floor. The market for hardwood pulpwood is very restricted at

present, and many of the trees that now stand can be cut to promote browse production by basal sprouting, without any loss other than the cost of felling. There is no doubt that much of the Cobequid mountain range in Nova Scotia, e.g., falls in this category. Research by the Department of Fisheries and Forestry has shown that good spruce can be grown there successfully, establishing it by planting, and browse can be produced by cutting hardwoods; in time commercially, no doubt, for a pulp mill.

The greatest danger of browsing is that it will spoil many trees by deforming them. This is particularly true near winter deer yards. In some areas it is simply impossible to grow white pine and yellow birch because of deer. Ideally, the wildlife manager must always be empowered to manage the deer herd. If he cannot control the deer, timber values may suffer and chances are that the wildlife values are then also risked in spite of well meaning protectionism. Wildlife after all, depends on the vegetation. Over-populations can destroy vegetation and, incidentally, themselves.

If we are allowed to manage in the true sense of the word, and keep deer populations in check, in game refuges too, heavy browsing is no longer a policy problem, but a management problem that we can cope with by, for instance, a periodic hunt. The vegetation manager can then begin to supply browse so dense or on such a large scale that enough stems escape. There are some questions we have no answer for yet, but we are working on them. We don't know e.g. how long species like red maple can live, being cut down all the time to stay within reach of deer all the time. Carrying some stems through to maturity means having a reserve available for treatment to produce browse in the future. There is a fine line between the number of trees adequate for a re-growing reserve of browse trees and the number of trees necessary to form a crop that is of lumber quality. We could raise the carrying capacity of any area so high, artificially, that periodic large die-offs will still occur, and that growing timber becomes too risky.

What then, is the procedure in carrying out some of the practical work? Considering wintering areas for deer once again, the first responsibility is one for the wildlifer. He must locate all of the major yards. Mapping density of tracks in the snow from the air is the usual technique. The aerial mapping is usually repeated from year to year and then considerable knowledge is gained regarding the variability in size and number of yards. As a rule, without detailed sampling of the vegetation, recommendations can be made for habitat improvement after a visual inspection on the ground. It may be decided that the cover should not be touched for sometime or that the cover should be enlarged, or partially cut, to be replaced progressively by younger trees. Or it may be found that the coniferous cover is too extensive and should be more discontinuous, in which case openings should be created and maintained. Then they must make their recommendations to the vegetation manager whose job it is to satisfy timber requirements. The consultative role of both must be recognized to bring about an effective dialogue. In Ontario some of the recommendations for wildlife management are now incorporated in the conditions for renewal of cutting licences.

Another example of planning timber and deer range management jointly is seen in New Hampshire. The Game Commission there, I am told, is very efficient in dealing with private ownership of deer yards. They first find out about private owners' cutting plans in known deer yards, and then they write a management plan for each property scheduled for cutting. They try to sell these management plans to the landowners on the basis of timber values alone but they consider the wildlife values of course. In this way they have saved more than 100 deer yards.

I have had no time, in this talk, to discuss techniques, such as the control of canopy density to influence growth of deer browse, time of cutting, fertilization in relation to the growth of browse, and in relation to the nutrient



requirements of deer. I hope to discuss these topics later this week with my colleagues from the Nova Scotia Department of Lands and Forests.

In conclusion, then; I have considered how to involve wildlife values in forest management, and I have considered the merits of resource management, as opposed to the narrow approach of specialized management objectives of e.g. timber or wildlife. Finally, I have indicated how wildlife and timber specialists can co-operate for a common goal, the management of the forest system. Foresters are by training, and often by experience, in the best position to be forest resource managers, and to manage wildlife habitat, in consultation with wildlife specialists. I think that the forestry profession should take more of the opportunities for true forest management or the profession may lose out on her resource management function by default.

